

Notice of Allowability

Application No.

10/626,117

Examiner

Toniae M. Thomas

Applicant(s)

BERRY, MICHELE J.

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 08 September 2006.
2. ☒ The allowed claim(s) is/are 14-34, 38-40 and 42-45.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 09/08/06, 09/11/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20061209
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


M. Wilczewski
Primary Examiner

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Robert E. Mates on 07 December 2006.

Amendment

3. The application has been amended as follows:

In Claims

Claim 38 has been replaced as follows:

38. A microelectronic device comprising: a package substrate having pin contact pads on a first surface thereof; a plurality of pins soldered to said pin contact pads on said first surface of said package substrate; a cured polymer material about solder joints associated with said pins; a microelectronic die connected to said package substrate, said microelectronic die having bond pads that are conductively coupled to said pins through said package substrate; and underfill material between said microelectronic die and said package substrate, wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins.

Claim 39 has been replaced as follows:

39. A microelectronic device comprising: a package substrate having pin contact pads on a first surface thereof; a plurality of pins soldered to said pin contact pads on said first surface of said package substrate; a cured polymer material about solder joints associated with said pins; a microelectronic die connected to said package substrate, said microelectronic die having bond pads that are conductively coupled to said pins through said package substrate; and wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins, said cured polymer material ~~has~~ having fluxing capabilities.

Claim 40 has been replaced as follows:

40. A device comprising: a package substrate having pin contact pads on a first surface thereof; a plurality of pins soldered to said pin contact pads on said first surface of said package substrate; a cured polymer material about solder joints associated with said pins; a microelectronic die connected to said package substrate, said microelectronic die having bond pads that are conductively coupled to said pins through said package substrate; and wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins, said cured polymer material ~~is~~ selected from the group consisting of one or more of Cookson 2071 E, Questech EF71 or LF-8,

Advanced Polymer Solutions (APS) UFR 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-100-1, Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

Claim 43 has been replaced as follows:

43. A microelectronic device comprising: a package substrate having pin contact pads on a first surface thereof; a plurality of pins soldered to said pin contact pads on said first surface of said package substrate; a cured polymer material about solder joints associated with said pins; a microelectronic die connected to said package substrate, said microelectronic die having bond pads that are conductively coupled to said pins through said package substrate; and wherein said microelectronic die is attached to said package substrate with a plurality of die attach contact pads on the package substrate in contact with a corresponding plurality of solder bumps on bond pads on a surface of said microelectronic die, the solder bumps comprising a high melting temperature, lead-free solder, wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins.

Claim 44 has been replaced as follows:

44. A substrate for use in a microelectronic circuit package, comprising: a plurality of pin contact pads on a first surface of said substrate; a plurality of pins soldered to said pin contact pads on said first surface of

said substrate; and a cured polymer material about solder joints associated with said pins wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins, said cured polymer material ~~has~~ having fluxing capabilities.

Claim 45 has been replaced as follows:

45. A substrate for use in a microelectronic circuit package, comprising: a plurality of pin contact pads on a first surface of said substrate; a plurality of pins soldered to said pin contact pads on said first surface of said substrate; and a cured polymer material about solder joints associated with said pins wherein a separate portion of said cured polymer material enshrouds an individual solder joint associated with each of said pins, said cured polymer material is selected from the group consisting of one or more of Cookson 2071 E, Questech EF71 or LF-8, Advanced Polymer Solutions (APS) UFR 1.0 to 1.5, Kester Solder SE-CURE® 9101, Emerson & Cuming RTP-100-1, Sumotomo CRP 4700, and Loctite FF2000 and FF2200, in any combination.

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: the prior art of record does not anticipate or render obvious a microelectronic device substantially as claimed. As evidenced in Bronson et al. (US 5,288,944), a substrate having a plurality of pin contact pads on a first surface of the

substrate; a plurality of pins soldered to the contact pads, and a cured polymer material about solder joints associated with pins is known. However, the prior art of record does not anticipate, teach or suggest a microelectronic device comprising a package substrate or a substrate for use in a microelectronic circuit package, the substrate having a plurality of pin contacts on a first surface and a plurality of pins soldered to the contact pads substantially as claimed, wherein a separate portion of a cured polymer material enshrouds an individual solder joint associated with each of the pins.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (571) 272-1846. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TMT

09 December 2006



M. Wilczewski
Primary Examiner
TC 2800